

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q78557

Setsuo MISHIMA, et al.

Appln. No.: 10/715,568

Group Art Unit: 1793

Confirmation No.: 5060

Examiner: Tima Michelle McGuthry Banks

Filed: November 19, 2003

For: MARAGING STEEL AND METHOD OF PRODUCING THE SAME

SUBMISSION OF EPO CLAIMS

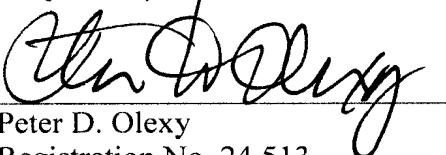
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Claims which correspond to claims 13 and 14 have been allowed in the European Patent Office. These are claims 1 and 2.

For the Examiners information a copy of claims 1 and 2 as allowed by the EPO is attached.

Respectfully submitted,



Peter D. Olexy
Registration No. 24,513

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: March 12, 2008

- 34 -

CLAIMS

*> allowed claims
of a counterpart EP
application*

1. A maraging steel comprising, by mass percent,
C : not more than 0.01 %;
Ni : 8.0 to 22.0 %;
Co : 5.0 to 20.0 %;
Mo : 2.0 to 9.0 %;
Ti : from more than 0 to not more than 2.0 %;
Al : not more than 1.7 %;
Mg : more than 0 to less than 10 ppm;
O : less than 10 ppm;
N : less than 15 ppm;
the balance being **Fe** and incidental impurities,

the maraging steel containing nitride inclusions having a maximum length of 15 μm and oxide inclusions having a maximum length of 20 μm ,

wherein the oxide inclusions comprise spinel-form inclusions and alumina inclusions in which the content rate of the spinel-form inclusions having a length of not less than 10 μm to the total content of spinel-form inclusions having a length of not less than 10 μm and alumina inclusions having a length of not less than 10 μm is more than 0.33.

2. A thin strip made from the maraging steel defined in claim 1 and having a thickness of not more than 0.5 mm.

2

2008年3月7日 11時20分

ASAMURA 81-3-32705076



NO. 0664 P. 3
European Patent Office
Postbus 5018
2280 HV RIJSWIJK
NETHERLANDS
Tel. +31 (0)70 340-2040
Fax +31 (0)70 340-3016



Strehl Schübel-Hopf & Partner
Maximilianstrasse 54
80538 München
ALLEMAGNE

Erhalten

25.JAN.2008

Strehl et al.

For any questions about
this communication:
Tel. +31 (0)70 340 45 00

Date	
24.01.08	
Reference EPA-40812	Application No./Patent No. 03026532.6 -1215/ 1422301
Applicant/Proprietor HITACHI METALS, LTD.	

Decision to grant a European patent pursuant to Article 97(1) EPC

Following examination of European patent application No. 03026532.6 a European patent with the title and the supporting documents indicated in the communication pursuant to Rule 71(3) EPC dated 23.08.07 is hereby granted in respect of the designated Contracting States.

Patent No. : 1422301 /
Date of filing : 18.11.03 /
Priority claimed : 19.11.02/JPA 2002335248
07.02.03/JPA 2003031453

Designated Contracting States and Proprietor(s) : DE FR GB NL
HITACHI METALS, LTD.
2-1, Shibaura 1-chome
Minato-ku,
Tokyo/JP

This decision will take effect on the date on which the European Patent Bulletin mentions the grant (Art. 97(3) EPC).

The mention of the grant will be published in European Patent Bulletin 08/08 of 20.02.08.

Examining Division

Bombeke M

Rischard M

Patterson A



3

Registered letter
EPO Form 2006A 12.07 16.01.08

to EPO postal service: 18.01.08



EPA/EPO/OEB
D-80298 München
TX +49 89 2399-0
FAX +49 89 2399-4465

Europäisches
Patentamt

Generaldirektion 2

European
Patent Office

Directorate General 2

Office européen
des brevets

Direction Générale 2

Strehl Schübel-Hopf & Partner
Maximilianstrasse 54
80538 München
ALLEMAGNE

Erhalten
27.AUG.2007
Strehl et al.



Application No. 03 026 532.6 - 1215	Ref. EPA-40812	Date 23.08.2007
Applicant HITACHI METALS, LTD.		

Communication under Rule 51(4) EPC

You are informed that the Examining Division intends to grant a European patent on the basis of the above application with the text and drawings as indicated below:

In the text for the Contracting States:
DE FR GB NL

Description, Pages

- 1-3, 8-33 as originally filed
- 4-7 received on 03.04.2007 with letter of 03.04.2007

Claims, Numbers

- 1, 2 received on 03.04.2007 with letter of 03.04.2007

Drawings, Sheets

- 1/5-5/5 as originally filed

With the following amendments to the above-mentioned documents by the examining division

Description, Pages 12

A copy of relevant documents is enclosed

6.1. 27.8.07

The title of the invention in the three official languages of the European Patent Office, the international patent classification, the designated Contracting States, the registered name of the applicant and the bibliographic data are shown on the attached EPO Form 2056.



Date 23.08.2007

Sheet 2

Application No.: 03 026 532.6

You are requested within a **non-extendable** period of four months of notification of this communication

1. to file 1 set of translations of the claim(s) in the two other EPO official languages;

EUR

- 2a. to pay the fee for grant including the fee for printing up to and including 35 pages;

Reference 007

750.00

- 2b. to pay the printing fee for the 36th and each additional page;
number of pages: 4

Reference 008

44.00

3. to pay the additional claim fee(s) (Rule 51(7) EPC);
number of claims fees payable:

Reference 016

0.00

Total amount

794.00

Concerning the possibility of a request for accelerated grant pursuant to Article 97(6) EPC, reference is made to OJ EPO 2001, 459.

If you do not approve the text intended for grant but wish to request amendments or corrections, the procedure described in Rule 51(5) EPC is to be followed.

If this communication is based upon an auxiliary request, and you reply within the time limit set that you maintain the main or a higher ranking request which is not allowable, the application will be refused (Article 97(1) EPC, see also Legal Advice 1505 (rev. 02), OJ 6/2005, 357).

If the enclosed claims contain amendments proposed by the Examining Division, and you reply within the time limit set that you cannot accept these amendments, refusal of the application under Article 97(1) EPC would result in the case that agreement cannot be reached on the text for grant.

In all cases except those of the previous two paragraphs, if the grant, printing or claims fees are not paid, or the translations not filed, in due time, the European patent application will be deemed to be withdrawn (Rule 51(8) EPC).

For all payments you are requested to use EPO Form 1010 or to refer to the relevant reference number.

After publication, the European patent specification can be downloaded free of charge from the EPO publication server <https://publications.european-patent-office.org> or ordered only from the Vienna sub-office upon payment of a fee (OJ EPO 2005, 126).

Upon request in writing each proprietor will receive the certificate for the European patent **together with one copy of the patent specification** only if the request is filed within the time limit of Rule 51(4) EPC. If such request has been previously filed, it has to be confirmed within the time limit of Rule 51(4) EPC. The requested copy is free of charge. If the request is filed after expiry of the Rule 51(4) EPC time limit, the certificate will be delivered without a copy of the patent specification.

Translation of the priority document(s)

If the translation of the priority document(s), as required by Article 88(1) EPC, or the declaration according to Rule 38(5) EPC has not yet been filed, Form 2530 will be despatched separately. The translation is to be filed within the above mentioned time limit (Rule 38(5) EPC).



Date 23.08.2007

Sheet 3

Application No.: 03 026 532.6

Note on payment of renewal fees

If a renewal fee falls due between notification of the present communication and the proposed date of publication of the mention of the grant of the European patent, publication will be effected only after the renewal fee and any additional fee have been paid (Rule 51(9) EPC).

Under Article 86(4) EPC, renewal fees are payable to the European Patent Office until the year in which the mention of the grant of the European patent is published.

Filing of translations in the Contracting States

Pursuant to Article 65(1) EPC the following Contracting States require a translation of the specification of the European patent in their/one of their official language(s) (Rule 51(10) EPC), **insofar** this specification will not be published in their/one of their official language(s)

- within **three** months of publication of the mention of such decision:

DE	GERMANY	GB	UNITED KINGDOM
FR	FRANCE	NL	NETHERLANDS

The date on which the European Patent Bulletin publishes the mention of the grant of the European patent will be indicated in the decision on the grant of the European patent (EPO Form 2006).

The translation must be filed with the national Patent Offices of the Contracting or Extension States in accordance with the provisions applying thereto in the State concerned. Further details (e.g. appointment of a national representative or indication of an address for service within the country) are given in the EPO information brochure "National law relating to the EPC", and in the supplementary information published in the Official Journal of the EPO, or available on the EPO website.

Failure to supply such translation to the Contracting and Extension States in time and in accordance with the requirements may result in the patent being deemed to be void ab initio in the State concerned.

Note to users of the automatic debiting procedure

Unless the EPO receives prior instructions to the contrary, the fee(s) will be debited on the last day of the period of payment. For further details see the Arrangements for the automatic debiting procedure (see Supplement to OJ EPO 2, 2002).



Date 23.08.2007

Sheet 4

Application No.: 03 026 532.6

Examining Division:

Chairman: Patterson, Anthony
2nd Examiner: Rischard, Marc
1st Examiner: Bombeke, Martin



VAN DER HOEVEN, M
For the Examining Division
Tel. No.: +31 70 340 - 3342 **Branch at The Hague**

Enclosure(s): Form 2056
· 39 Copies of the relevant documents

Annex to EPO Form 2004, Communication under Rule 51(4) EPC**Bibliographical data of European patent application No. 03 026 532.6**

For the intended grant of a European patent, the bibliographical data are set out below, for information:

Title of invention: - Maraging-Stahl und Verfahren zu dessen Herstellung
 - Maraging steel and method of producing the same
 - Acier maraging et son procédé d'élaboration

Classification: INV. C22B9/20 C22C38/10 C21C7/04

Date of filing: 18.11.2003

Priority claimed: JP / 19.11.2002 / JPA2002335248 ✓
 JP / 07.02.2003 / JPA2003031453 ✓

Contracting States*
 for which fees have
 been paid: DE FR GB NL

Extension States*
 for which fees have
 been paid:

Applicant(s):** HITACHI METALS, LTD. ✓✓
 2-1, Shibaura 1-chome
 Minato-ku,
 Tokyo
 JP

Inventor(s): Mishima, Setsuo ✓✓
 3706-8, Nishikawatsucho
 Matsue-shi
 Shimane 690-0021
 JP

Takao, Hidemi ✓✓
 100-8, Yadacho
 Matsue-shi
 Shimane 690-0021
 JP

Hara, Kenichiro ✓✓
 291-62, Kawaoka
 Yonago-shi
 Tottori 689-3521
 JP

Fujita, Etsuo ✓✓
 1514-5, Hashimacho
 Yasugi-shi
 Shimane 692-0014
 JP

27.3.07

- *)** In case the time limits pursuant to Article 79(2) and Rule 85a EPC have not yet expired, all Contracting States/Extension States have been mentioned.
- **) In case two or more applicants have designated different Contracting States, this is indicated here.**

- 12 -

high, temperature of the surface of molten steel irradiated with a beam under high vacuum is high, selective evaporation of the element occurs, and it is difficult to control components. Moreover, in a vacuum 5 electro slug remelting process, the effect of Mg addition is obtained in the same manner as in the vacuum arc remelting process, but evaporation phenomenon of Mg is inhibited by slug, and the Mg addition effect is reduced. Therefore, the vacuum arc 10 remelting process is preferable for the vacuum remelting in the present invention.

When the maraging steel produced by the above-described method is applied to a component for a continuously variable transmission of an automobile 15 engine, steel is formed into a thin strip having a thickness of not more than 0.5 mm by plastic working such as hot rolling and cold rolling.

By the plastic working performed after the vacuum remelting, the oxide inclusions is crushed or 20 extended or torn, and can be refined. For example, magnesia generated by Mg addition or a cluster of spinel form inclusions that take place during the vacuum remelting is also segmentized and refined by the hot or cold plastic working.

25 By a combination of the plastic working, the thin strip is especially preferable as a maraging steel thin strip for the component for the continuously variable transmission, which has a high fatigue